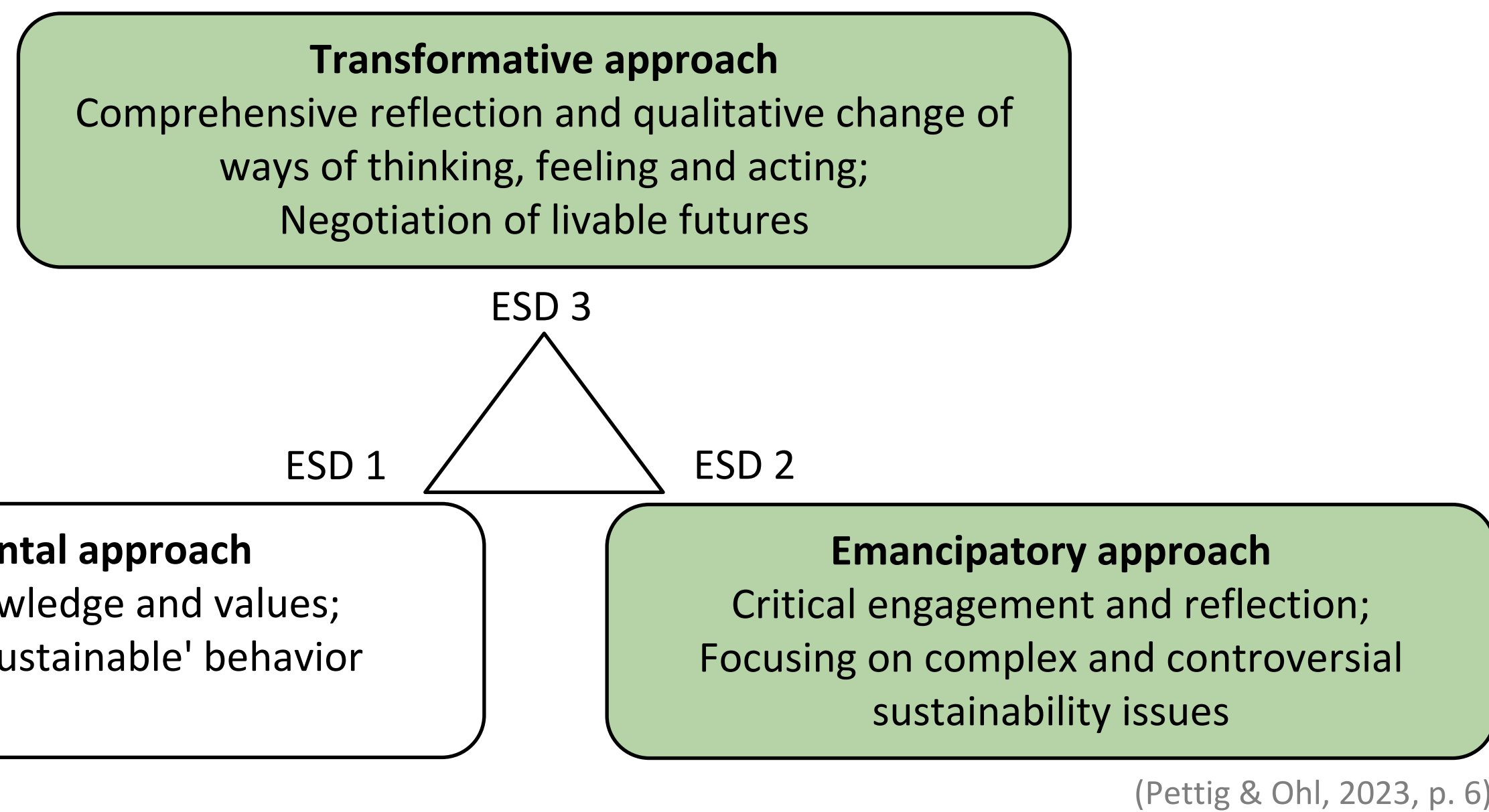


Primary School Students' Conceptions of Mobility in the Context of Education for Sustainable Development: A Systematic Literature Review

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Theoretical Background

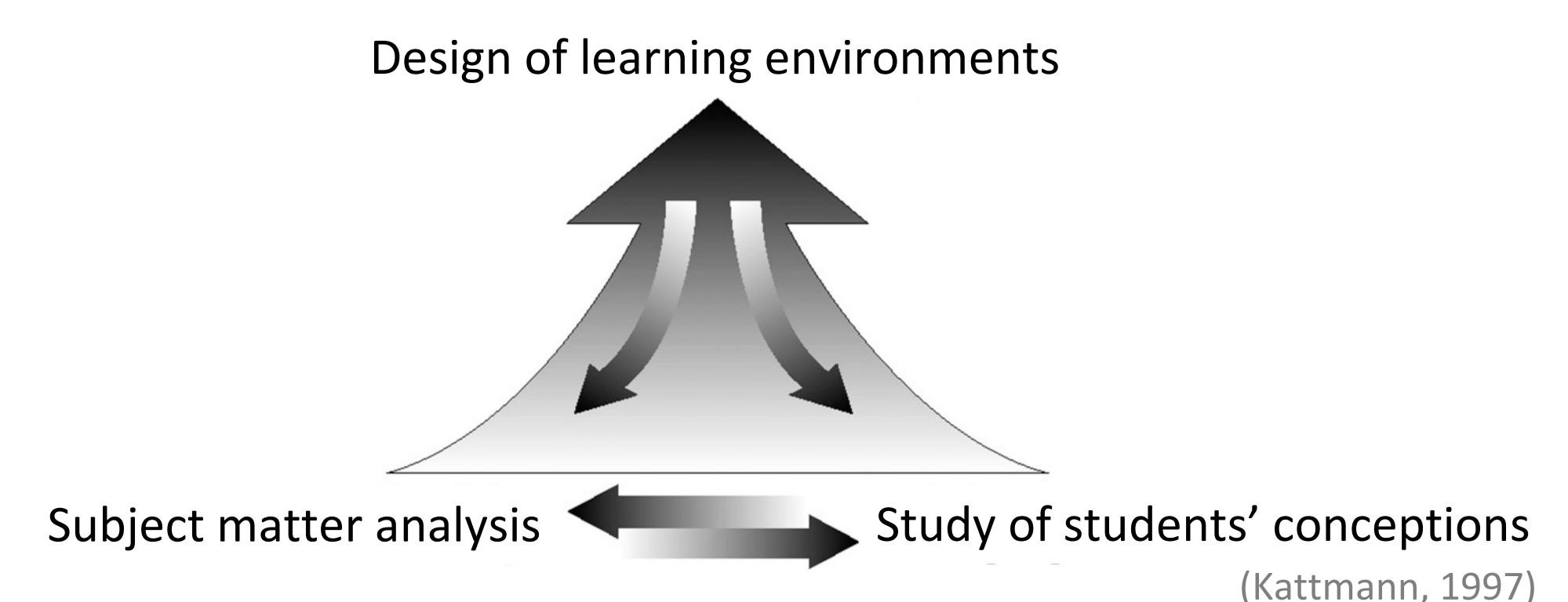
Mobility education in the context of a critical emancipatory ESD



- **Goal:** Enabling students to make independent, reflective, environmentally responsible choices about the modes of transportation they use and fostering competencies in shaping the transportation environment (GDSU, 2013, p. 74)
- Normative orientation towards sustainable development, inclusion, democracy and human rights (Schwedes et al., 2021, p. 25)

Student conceptions and didactical reconstruction

- **Student conceptions** are „Mental concepts that a human being makes of the world surrounding him and affecting him through sensory impressions.“ [translation E.S.] (Duit, 1997, p. 234)
- Knowledge acquisition is an active and independent construction process of the individual (Gerstenmaier & Mandl, 1995; Reinfried, 2007)
- **Didactical Reconstruction**
 - Basis for planning effective learning content, goals and learning approaches (Kattmann, 2007)
 - Scientific and everyday approaches are relevant to judgment and potentially relevant to action (Heldt, 2018, p. 33)



Research aim: Examining the state of literature concerning primary school student conceptions of mobility within a *descriptive literature review* (Xiao & Watson, 2019, p. 95)

Research Questions

Which studies can be found on the conceptions of mobility of primary school students?

1. Which goals of mobility education in primary school are addressed?
2. What are the main findings on the conceptions of primary school students?

Method

Search terms and strategy

3 word clusters: **1** school **2** student **3** mobility
boolean combination: **1 AND 2 AND 3**

Main inclusion criteria: empirical study published between 2010 - 2023

Identification	Screening	Inclusion	Coding
<ul style="list-style-type: none"> ERIC n=153 Fachportal Pädagogik n=70 OPAC n=74 PsycINFO n=194 Scopus n=1079 Web of Science n=868 Duplicate records removed n=989 	<ul style="list-style-type: none"> Records screened by title and abstract n=1449 – Interrater reliability: Cohens κ=.80 Full-text analysis n=33 – Interrater reliability: Cohens κ=.75 	<ul style="list-style-type: none"> Studies included from database screening n=12 Studies included from additional sources (forward and backward citation search, publication lists) n=6 Total n=18 	<ul style="list-style-type: none"> Qualitative content analysis (Kuckartz, 2018) Consensual coding of 9 articles completed

Discussion and next steps

Limitations

- Studies examine perceptions of students from different spatial and social contexts → consideration in evaluation of the systematic literature review
- Age of students varies from beginning of primary school to end of primary school → differentiation of results
- Studies were sometimes conducted more than 10 years ago (e.g., Kopnina, 2011) → today's student conceptions may differ

Further procedure

- Consensual coding of all included articles and calculation of the intercoder reliability

Preliminary results

Research question 1: Goals of mobility education (n=9)

- Fostering individual responsibility in the field of mobility (e.g., developing respect for life and the environment and an awareness of one's own behavior) (Borg et al., 2017; Kopnina, 2011; Krämer, 2014; Özsoy & Ahi, 2014; Sipone et al., 2021)
- Introduction and promotion of sustainable mobility practices (Sipone, 2021)
- Developing competence for collective action (Kopnina, 2011; Özsoy & Ahi, 2014)
- Goals focus mainly on the instrumental approach of ESD (Pettig & Ohl, 2023)
- Goals rarely refer to concrete competencies that students should develop (e.g., ability to reflect, systems-thinking) (Redman & Wiek, 2021)

Research question 2: Primary school students' conceptions (n=9)

- Advantages and disadvantages of different **means of transportation** are largely clear (Borg, 2017; Burghardt, 2014; Kester et al., 2019; Kopnina, 2011)
 - Partial uncertainties in the ecological assessment of bus and train (Borg et al., 2017; Krämer, 2014; Sipone et al., 2019)
 - Advantages and disadvantages related to social and economic aspects or more complex interrelationships (e.g. justifications of ecological advantages) can be initiated in the context of an intervention (Sipone et al., 2019)
- Heterogeneous ideas about the **future of the car**

Vroom (N=127): More and larger cars, more infrastructure

Car Free (N=120): Less car-based transport, car free zones

Alternative fuels (N=210): Fuel shift, energy efficiency, increased safety

Better car (N=130): Improvement of a cars energy efficiency and safety

(Kester et al., 2019)

- Change in car use is frequently expressed (Kester et al., 2019; Kopnina, 2011)
- Desire to learn to drive is often present (Kester et al., 2019; Kopnina, 2011)
- **Sustainable mobility** is associated with low pollution, but not with reduction of private vehicles (Sipone et al., 2019)
 - Electric cars, green spaces with trees, bike lanes, traffic-calmed zones, crosswalks, pedestrian zones are considered sustainable (Sipone et al., 2019)

Sources

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